

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An injection molding nozzle tip removably attachable to a nozzle housing, the nozzle tip comprising:

a nozzle tip retainer~~first portion~~, and a seal ring configured to seal against at least a portion of a mold, wherein said nozzle tip is~~second portion~~ fused to said seal ring~~the first portion~~ at a junction, and wherein the nozzle tip retainer~~first~~ and said seal ring~~second portions~~ comprise being made of different materials having at least one different material property.

2. (Original) The nozzle tip of claim 1, wherein the junction is oriented substantially radially.

3. (Withdrawn) The nozzle tip of claim 1, wherein the junction is oriented at an angle from radial.

4. (Cancelled)

5. (Withdrawn) The nozzle tip of claim 1, wherein the first portion is a tip portion and the second portion is a cap.

6. (Withdrawn) The nozzle tip of claim 1, wherein the first portion is a retaining plate for a multi-probe nozzle tip, and the second portion is a seal ring.

7. (Withdrawn) An injection molding manifold bushing, comprising:

a first portion, and a second portion fused to the first portion at a junction, the first and second portions being made of different materials.

8. (Withdrawn) An injection molding nozzle valve stem, comprising:

a first portion, and a second portion fused to the first portion at a junction, the first and second portions being made of different materials.

9. (Withdrawn) The valve stem of claim 8, wherein the second portion is a tip end of the valve stem.

10. (Withdrawn) An injection molding nozzle housing, comprising:

a body portion, and a flanged portion fused to the body portion at a junction, the body portion and flanged portions being made of different materials.

11. (Withdrawn) An injection molding nozzle tip insert comprising:

a shank portion, and an end portion fused to the shank portion at a junction, the shank portion and end portions being made of different materials.

12. (Withdrawn) A method of making an injection molding nozzle tip component with a seal ring, comprising the steps of:

forming a first portion of the nozzle tip component from a first material;

forming a seal ring from a second material;

aligning the seal ring to the first portion at a junction whereat a surface of the seal ring abuts a surface of the first portion; and

fusing the first portion and the seal ring together at the junction.

13. (Withdrawn) The method of claim 12, wherein the fusing is done by electron beam welding.

14. (Withdrawn) The method of claim 12, further comprising the step of machining the fused first and second portions to a final configuration which removes material adjacent the junction.

15. (Withdrawn) The method of claim 12, wherein the aligning is done by an alignment feature formed on the first and second portions.

16. (Withdrawn) The method of claim 15, wherein the alignment feature is a ridge formed in one of the portions and a recess formed in the other portion, the recess receiving the ridge to align the portions.

17. (Withdrawn) A method of forming an injection molding nozzle tip component, comprising the steps of:

forming a first blank for a first portion of the nozzle tip component;

forming a second blank for a second portion of the nozzle tip component;

abutting the second blank against the first blank at a junction;

fusing the first blank and second blank at the junction; and

machining the fused first and second blanks to a configuration for the first portion and second portion of the nozzle tip component.

18. (Withdrawn) The method of claim 17, wherein the fusing is done by electron beam welding.

19. (Withdrawn) The method of claim 18, wherein the first portion is a tip retainer and second portion is a seal ring.

20. (Currently Amended) The nozzle tip according to claim 1, further including a tip insert, wherein said tip retainer is configured to receive and retain said tip insert against said nozzle housing~~operatively assembled to the first and second portions.~~

21-31. (Cancelled)

32. (New) A nozzle tip comprising:

a tip retainer comprising a first and a second end region disposed generally opposite each other along a longitudinal axis of said tip retainer, said first end region configured to be removeably secured to a nozzle housing;

a seal ring comprising a third and a fourth end region disposed generally opposite each other along a longitudinal axis of said seal ring, said third end region configured to seal against at least a portion of a mold, wherein said seal ring and said tip retainer comprise a first and a second material having at least one different material property; and

a fusion junction comprising a substantially radial interface between said second end region of said tip retainer and said fourth end region of said seal ring.

33. (New) The nozzle tip of claim 32 wherein said seal ring further comprises a material having a thermal conductivity that is less than a thermal conductivity of said tip retainer.

34. (New) The nozzle tip of claim 32 wherein said first and second materials have different wear resistances.

35. (New) The nozzle tip of claim 32 wherein said first and second materials have different strengths.

36. (New) The nozzle tip of claim 32 wherein said first and second materials have different resiliencies.

37. (New) The nozzle tip of claim 32 wherein said tip retainer further comprises a central bore having a first and a second inner diameter forming a shoulder region configured to engage a portion of a tip insert.

38. (New) The nozzle tip of claim 37 wherein said tip retainer further comprises a circumferential groove configured to retain a heater disposed about an outer circumference of said tip retainer.

39. (New) The nozzle tip of claim 37 wherein said first end region of said tip retainer further comprises an internally threaded region configured engage with a threaded region of said nozzle housing.

40. (New) The nozzle tip of claim 32 wherein said third end region of said seal ring comprises a substantially planar sealing surface.

41. (New) The nozzle tip of claim 40 wherein an exterior surface of said seal ring further comprises a circumferential groove between said third and said fourth end regions.



42. (New) A nozzle comprising:

a nozzle housing comprising a melt channel disposed along a longitudinal axis of said nozzle housing and configured to be in fluid communication with a source of pressurized molten material; and

a nozzle tip comprising:

a tip insert including a tip channel configured to be in fluid communication with said melt channel and including at least one aperture in fluid communication with said tip channel;

a tip retainer configured to receive and retain said tip insert, said tip retainer comprising a first and a second end region disposed generally opposite each other along a longitudinal axis of said tip retainer, said first end region configured to be removeably secured to said nozzle housing;

a seal ring comprising a third and a fourth end region disposed generally opposite each other along a longitudinal axis of said seal ring, said third end region configured to seal against at least a portion of a mold; and

a fusion junction comprising a substantially radial interface between said second end region of said tip retainer and said fourth end region of said seal ring, wherein said seal ring and said tip retainer comprise a first and a second material having at least one different material property.

43. (New) The nozzle of claim 42 wherein said seal ring further comprises a material having a thermal conductivity that is less than a thermal conductivity of said tip retainer.

44. (New) The nozzle of claim 42 wherein said tip retainer further comprises a central bore having a first and a second inner diameter forming a shoulder region and wherein said tip insert comprises a flanged region configured to engage said shoulder region.

45. (New) The nozzle of claim 42 wherein said tip retainer further comprises a circumferential groove configured to retain a heater disposed about an outer circumference of said tip retainer.

46. (New) The nozzle of claim 42 wherein said first end region of said tip retainer further comprises a first threaded region configured engage with a second threaded region of said nozzle housing.

47. (New) The nozzle of claim 42 wherein said third end region of said seal ring comprises a substantially planar sealing surface.

48. (New) The nozzle of claim 47 wherein an exterior surface of said seal ring further comprises a circumferential groove between said third and said fourth end regions.

### Claim Amendments

In the Office Action dated June 22, 2006, the response which was filed May 31, 2006 was deemed non-responsive as presenting only claims directed to the non-elected species. Although not explicitly stated, Applicant presumes that the amendment filed May 31, 2006 was not entered per the Office Action dated June 22, 2006 and has amended the present application based on this understanding. Applicant submits that all of the newly added claims read on the elected invention.

Independent claim 1 has been amended to include the limitations previously recited in dependent claim 4 and to clarify that the nozzle tip and seal ring have different material properties and that the seal ring is configured to seal against the mold. Support for this amendment can be found, for example, in paragraph [0043].

Claim 20 has been amended to recite that the tip retainer is configured to receive and retain a tip insert. Support for this amendment can be found, for example, in paragraph [0036] as well as FIG. 1.

Claims 4 and 21-31 have been cancelled without prejudice.

Claims 32-48 have been added. Specifically, independent claim 32 recites, generally, a nozzle tip comprising a tip retainer, a seal ring, and a fusion junction. Support for this claim can be found, for example, in FIGS. 1, 3, and 4 as well as paragraphs [0035], [0036], [0039], [0040] and [0043].

Support for claim 33 can be found, for example, in paragraphs [0039] and [0043].

Support for claims 34-36 can be found, for example, in paragraph [0043].

Support for claim 37 can be found, for example, in FIG. 1 as well as paragraph [0036].

Support for claim 38 can be found, for example, in FIGS. 3 and 5 as well as paragraph [0043].

Support for claim 39 can be found, for example, in FIG. 1 as well as paragraph [0036].

Support for claim 40 and 41 can be found, for example, in FIGS. 1 and 5.

Independent claim 42 recites, generally, a nozzle housing and a nozzle tip comprising a tip insert, a tip retainer, a seal ring, and a fusion junction. Applicant submits that this claim reads on the elected invention. Support for this claim can be found, for example, in FIGS. 1, 3, and 4 as well as paragraphs [0035], [0036], [0039], [0040] and [0043].

Support for remaining dependent claims 43-48 can be found at least as described above.

Accordingly, claims 1, 2, 20, and 32-48 are under consideration. Applicant submits that no new matter has been added. Entry of the above amendments is respectfully requested pursuant to the Request for Continued Examination filed May 31, 2006.